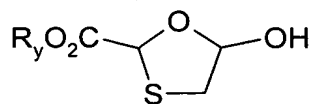


The following listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

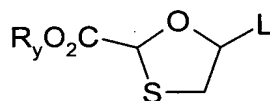
35. (Currently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula  $R_yOOCCHO$ , wherein  $R_y$  is  $C_{1-12}$  alkyl or  $C_{6-20}$  aryl to obtain a compound of formula (XV)



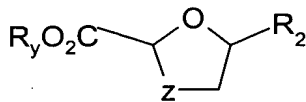
(XV) ;

converting the hydroxyl group of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



(XVI) ;

reacting the compound of formula (XVI) with a silylated  $R_2$ - compound , in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):



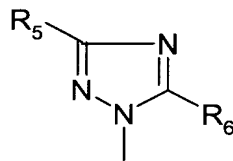
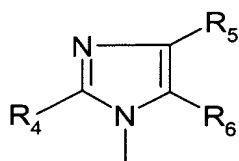
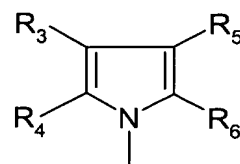
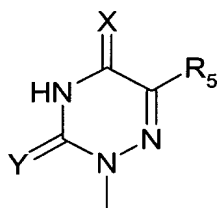
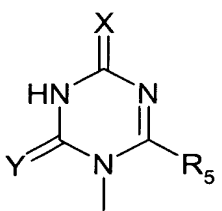
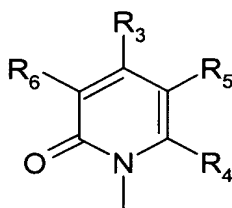
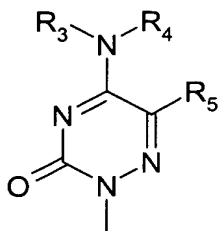
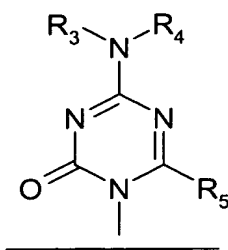
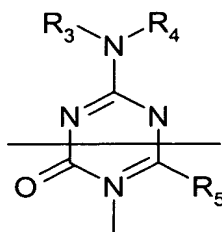
(XVII) ,

wherein

$Z$  is S;

$R_2$  is selected from the following group:

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X is oxygen or sulfur;

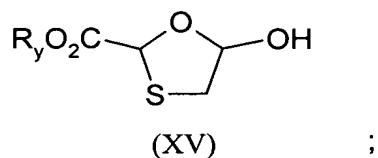
Y is oxygen or sulfur;

R<sub>3</sub> and R<sub>4</sub> are independently selected from hydrogen, hydroxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyl or aracyl; and

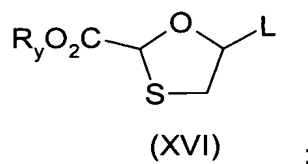
R<sub>5</sub> and R<sub>6</sub> are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy.

36. (Currently Amended) A process comprising:

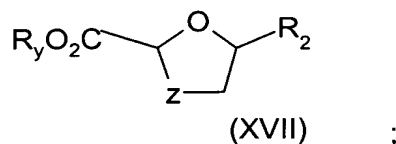
reacting a mercaptoacetaldehyde with a compound of formula  $R_yOOCCHO$ , wherein  $R_y$  is  $C_{1-12}$  alkyl or  $C_{6-20}$  aryl to obtain a compound of formula (XV)



converting the hydroxyl group of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



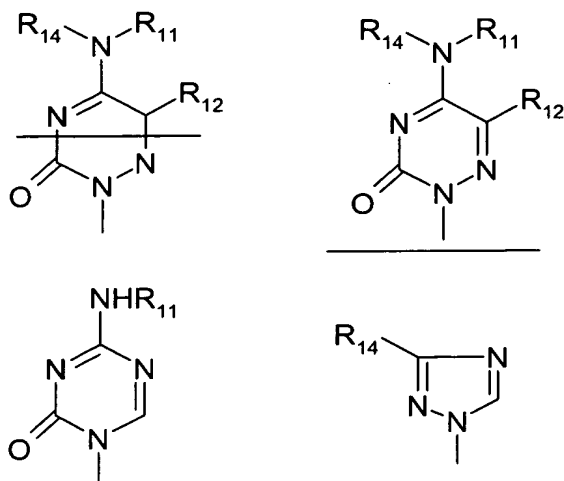
reacting the compound of formula (XVI) with a silylated  $R_2$ - compound , in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):



wherein

Z is S;

$R_2$  is selected from the following group:



wherein

$R_{11}$  is selected from hydrogen, acetyl, and  $C_{1-6}$  alkyl;

$R_{12}$  is selected from hydrogen, hydroxymethyl, trifluoromethyl,  $C_{1-6}$  alkyl,  $C_{1-6}$  alkenyl, bromine, chlorine, fluorine, and iodine; and

$R_{14}$  is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl.

37. (Previously Presented) A process according to claim 35, wherein L is  $OR_z$ , wherein  $R_z$  is selected from:  $C_{1-6}$  alkyl groups,  $C_{1-6}$  aliphatic groups, aromatic acyl groups, saturated or unsaturated alkoxy carbonyl groups, sulphonyl imidazolide, carbonyl imidazolide, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

38. (Previously Presented) A process according to claim 36, wherein L is  $OR_z$ , wherein  $R_z$  is selected from:  $C_{1-6}$  alkyl groups,  $C_{1-6}$  aliphatic groups, aromatic acyl groups, saturated or unsaturated alkoxy carbonyl groups, sulphonyl imidazolide, carbonyl imidazolide, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

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39. (Previously Presented) A process according to claim 35, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert solvent.

40. (Previously Presented) A process according to claim 39, wherein said inert solvent is selected from the group consisting of: pyridine, toluene and DMSO.

41. (Previously Presented) A process according to claim 35, wherein said compound of formula  $R_yOOCCHO$  is ethyl gloxylate.

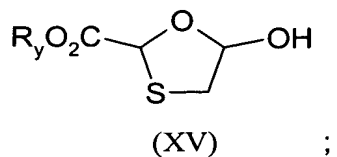
42. (Previously Presented) A process according to claim 36, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert solvent.

43. (Previously Presented) A process according to claim 42, wherein said inert solvent is selected from the group consisting of: pyridine, toluene and DMSO.

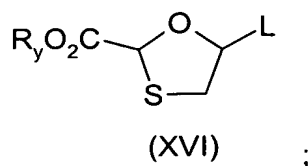
44. (Previously Presented) A process according to claim 36, wherein said compound of formula  $R_yOOCCHO$  is ethyl gloxylate.

45. (Previously Presented) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula  $R_yOOCCHO$ , wherein  $R_y$  is  $C_{1-12}$  alkyl or  $C_{6-20}$  aryl to obtain a compound of formula (XV)

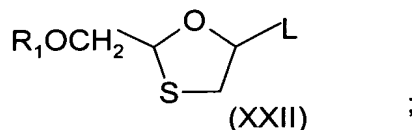


converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



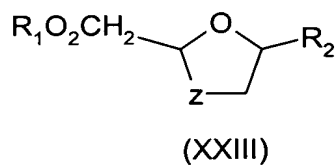
converting the group  $R_yO_2C$  of the compound of formula (XVI) to a hydroxymethyl group;

protecting the resulting hydroxymethyl with a protecting function  $R_1$  to obtain a compound of formula (XXII):



wherein  $R_1$  is selected from the group consisting of  $C_{1-16}$  acyl, t-butyldimethylsilyl, and t-butyldiphenylsilyl;

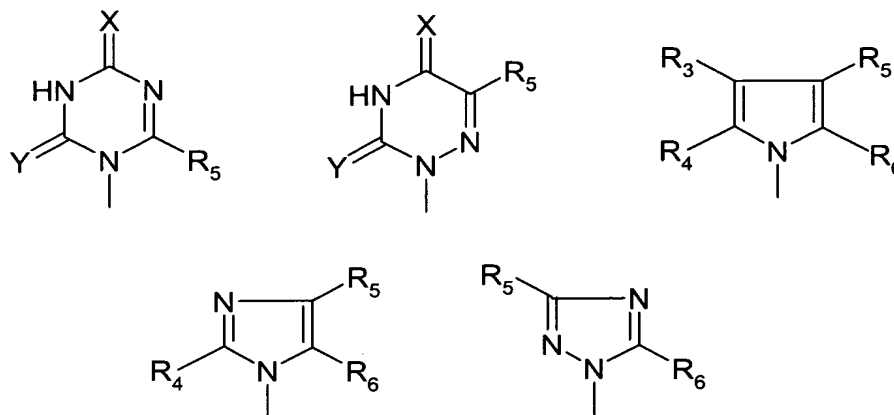
reacting the compound of formula (XXII) with a silylated- $R_2$  compound, in the presence of a Lewis acid, whereby said leaving group is displaced, to obtain a compound of formula (XXIII):



wherein

Z is S;

R<sub>2</sub> is selected from the following group:



X is oxygen or sulfur;

Y is oxygen or sulfur;

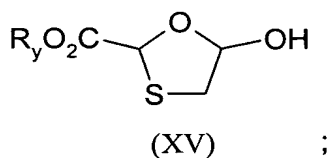
R<sub>3</sub> and R<sub>4</sub> are independently selected from hydrogen, hydroxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyl or aracyl; and

R<sub>5</sub> and R<sub>6</sub> are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy; and

optionally further comprising oxidizing Z of said compound of formula (XXIII) to obtain a compound of formula (XXIII) wherein Z is S=O or SO<sub>2</sub>.

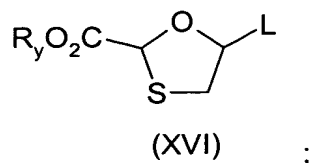
46. (Currently Amended) A process comprising:

reacting a mercaptoacetaldehyde with a compound of formula R<sub>y</sub>OOCCHO, wherein R<sub>y</sub> is C<sub>1-12</sub> alkyl or C<sub>6-20</sub> aryl to obtain a compound of formula (XV)



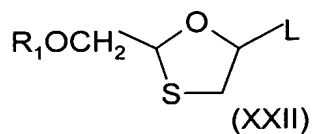
IAF-1/2 C11

converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



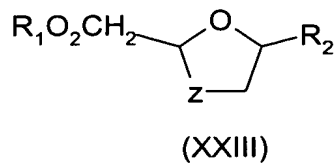
converting the group  $R_yO_2C$  of the compound of formula (XVI) to a hydroxymethyl group;

protecting the resulting hydroxymethyl with a protecting function  $R_1$  to obtain a compound of formula (XXII):



wherein  $R_1$  is selected from the group consisting of  $C_{1-16}$  acyl, t-butyldimethylsilyl, and t-butyldiphenylsilyl;

reacting the compound of formula (XXII) with a silylated- $R_2$  compound, in the presence of a Lewis acid, whereby said leaving group is displaced, to obtain a compound of formula (XXIII):



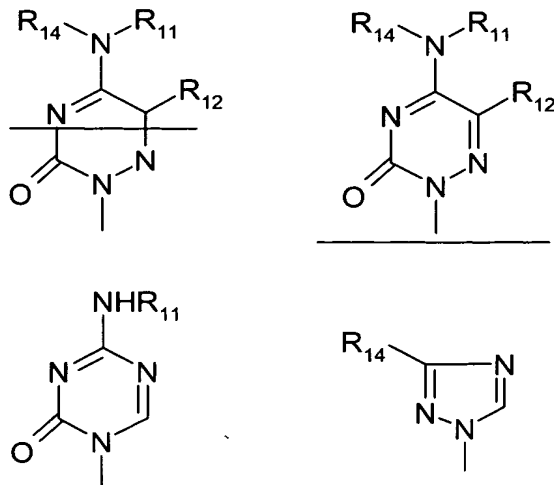
wherein

Z is S;

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R<sub>2</sub> is selected from the following group:



wherein

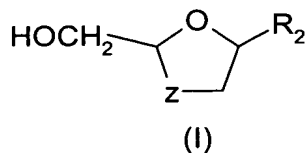
R<sub>11</sub> is selected from hydrogen, acetyl, and C<sub>1-6</sub> alkyl;

R<sub>12</sub> is selected from hydrogen, hydroxymethyl, trifluoromethyl, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkenyl, bromine, chlorine, fluorine, and iodine; and

R<sub>14</sub> is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl; and

optionally further comprising oxidizing Z of said compound of formula (XXIII) to obtain a compound of formula (XXIII) wherein Z is S=O or SO<sub>2</sub>.

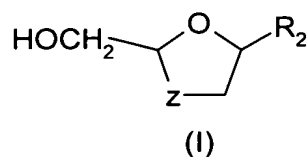
47. (Previously Presented) A process according to claim 45, further comprising the step of removing the hydroxyl protecting function R<sub>1</sub> from compound (XXIII) to obtain a compound of formula (I):



wherein Z is S, S=O, or SO<sub>2</sub>, and R<sub>2</sub> is as defined.

**48.** (Previously Presented) A process according to claim 47, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, TiCl<sub>4</sub> and SnCl<sub>4</sub>.

**49.** (Previously Presented) A process according to claim 46, further comprising the step of removing the hydroxyl protecting function R<sub>1</sub> from compound (XXIII) to obtain a compound of formula (I):



wherein Z is S, S=O, or SO<sub>2</sub>, and R<sub>2</sub> is as defined.

**50.** (Previously Presented) A process according to claim 49, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, TiCl<sub>4</sub> and SnCl<sub>4</sub>.

**51.** (Cancelled):

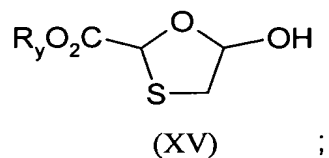
**52.** (Cancelled):

**53.** (Cancelled):

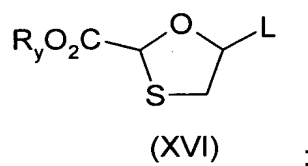
**54.** (Cancelled):

**55.** (Previously Presented) A process comprising:

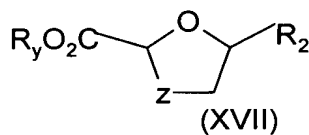
reacting a mercaptoacetaldehyde with a compound of formula  $R_y\text{OOCCHO}$ , wherein  $R_y$  is  $C_{1-12}$  alkyl or  $C_{6-20}$  aryl to obtain a compound of formula (XV)



converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



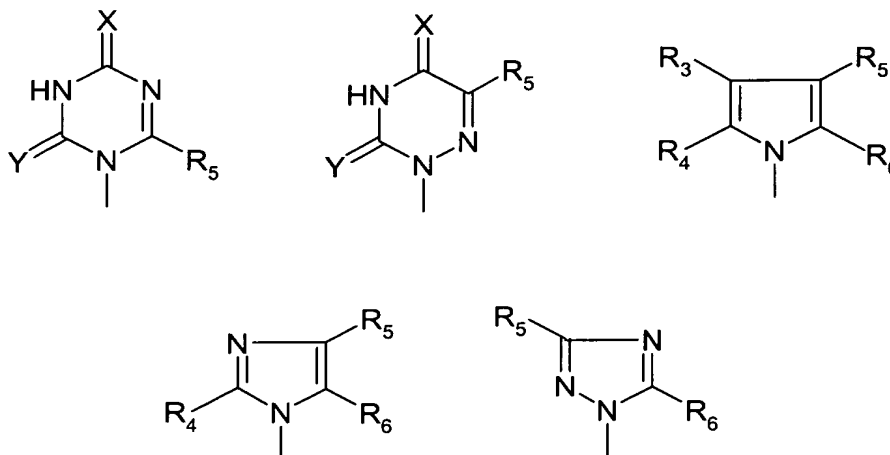
reacting the compound of formula (XVI) with a silylated  $-R_2$  compound in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):



wherein

Z is S;

R<sub>2</sub> is selected from the following group:



X is oxygen or sulfur;

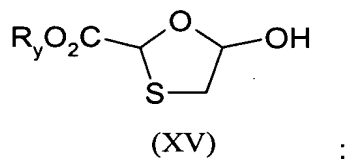
Y is oxygen or sulfur;

R<sub>3</sub> and R<sub>4</sub> are independently selected from hydrogen, hydroxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyl or aracyl; and

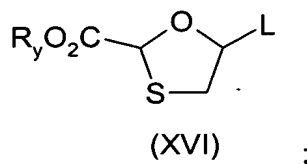
R<sub>5</sub> and R<sub>6</sub> are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy.

56. (Currently Amended) A process comprising:

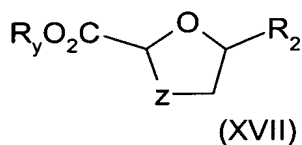
reacting a mercaptoacetaldehyde with a compound of formula R<sub>y</sub>OOCCHO, wherein R<sub>y</sub> is C<sub>1-12</sub> alkyl or C<sub>6-20</sub> aryl to obtain a compound of formula (XV)



converting the hydroxyl of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



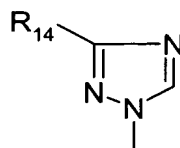
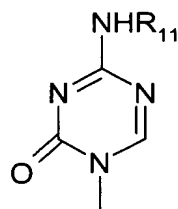
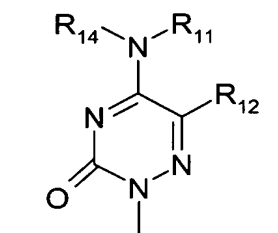
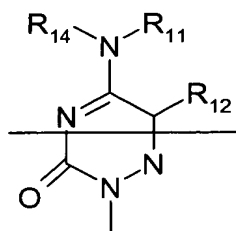
reacting the compound of formula (XVI) with a silylated -R<sub>2</sub> compound in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):



wherein

Z is S;

R<sub>2</sub> is selected from the following group:



R<sub>11</sub> is selected from hydrogen, acetyl, and C<sub>1-6</sub> alkyl;

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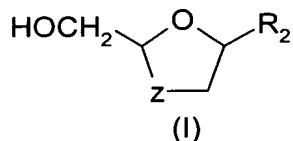
R<sub>12</sub> is selected from hydrogen, hydroxymethyl, trifluoromethyl, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkenyl, bromine, chlorine, fluorine, and iodine; and

R<sub>14</sub> is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl.

57. (Previously Presented) A process according to claim 55, further comprising oxidizing Z of the compound of formula (XVII) to give a compound of formula (XVII) wherein Z is S=O or SO<sub>2</sub>.

58. (Previously Presented) A process according to claim 55, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, TiCl<sub>4</sub> and SnCl<sub>4</sub>.

59. (Previously Presented) A process according to claim 55, further comprising optionally oxidizing Z of the compound of formula (XVII) to give a compound of formula XVII wherein Z is S=O or SO<sub>2</sub> and  
reducing the R<sub>y</sub>O<sub>2</sub>C group of the compound of formula (XVII) to obtain a compound of formula (I):



wherein:

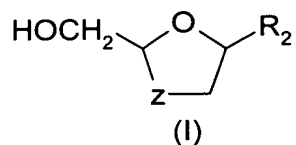
Z is selected from the group consisting of S, S=O and SO<sub>2</sub>.

60. (Previously Presented) A process according to claim 56, further comprising oxidizing Z of the compound of formula (XVII) to give a compound of formula (XVII) wherein Z is S=O or SO<sub>2</sub>.

61. (Previously Presented) A process according to claim 56, wherein the Lewis acid is selected from the group consisting of: TMSOTf, TMSI, TiCl<sub>4</sub> and SnCl<sub>4</sub>.

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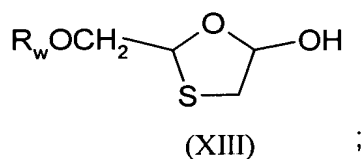
62. (Previously Presented) A process according to claim 56, further comprising optionally oxidizing Z of the compound of formula (XVII) to give a compound of formula XVII wherein Z is S=O or SO<sub>2</sub> and reducing the R<sub>y</sub>O<sub>2</sub>C group of the compound of formula (XVII) to obtain a compound of formula (I):



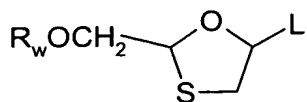
wherein:

Z is selected from the group consisting of S, S=O and SO<sub>2</sub>.

63. (Previously Presented) A process comprising:  
reacting a mercaptoacetaldehyde with a compound of formula R<sub>w</sub>OCH<sub>2</sub>CHO, under neutral or basic conditions, wherein R<sub>w</sub> is hydrogen or a hydroxyl protecting group to obtain a compound of formula (XIII)



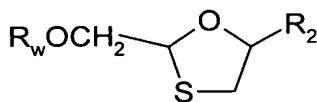
converting the hydroxyl of the compound of formula (XIII) to a leaving group L to obtain a compound of formula (XIV):



(XIV)

;

reacting the compound of formula (XIV) with a silylated  $R_2$  compound, in the presence of a Lewis acid, said leaving group is displaced, to produce a compound of formula (IX):  
wherein

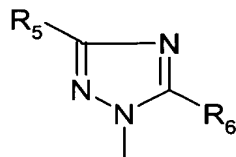
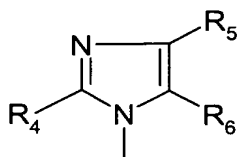
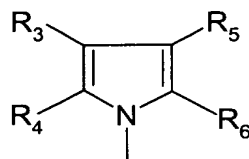
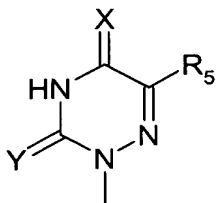
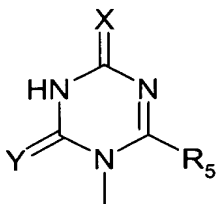


(IX)

;

Z is S, and

$R_2$  is selected from the following group:



X is oxygen or sulfur; Y is oxygen or sulfur;



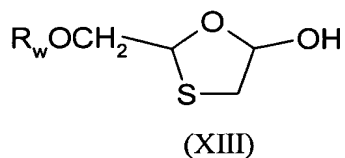
$R_3$  and  $R_4$  are independently selected from the group consisting of hydrogen, hydroxyl, amino, substituted or unsubstituted  $C_{1-6}$  alkyl or  $C_{2-6}$  alkenyl or  $C_{2-6}$  alkynyl, and substituted or unsubstituted  $C_{1-10}$  acyl or aracyl; and

$R_5$  and  $R_6$  are independently selected from the group consisting of hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxy carbonyl, hydroxymethyl, trifluoromethyl, thioaryl, substituted or unsubstituted  $C_{1-6}$  alkyl or  $C_{2-6}$  alkenyl or  $C_{2-6}$  alkynyl, and substituted or unsubstituted  $C_{1-10}$  acyloxy; and

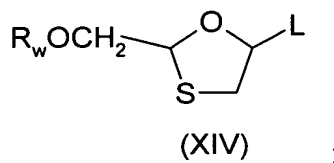
optionally further comprising oxidizing Z of said compound of formula (IX) to obtain a compound of formula (IX) wherein Z is  $S=O$  or  $SO_2$ .

**64.** (Currently Amended) A process comprising:

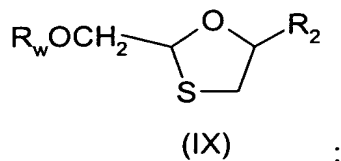
reacting a mercaptoacetaldehyde with a compound of formula  $R_wOCH_2CHO$ , under neutral or basic conditions, wherein  $R_w$  is hydrogen or a hydroxyl protecting group to obtain a compound of formula (XIII)



converting the hydroxyl of the compound of formula (XIII) to a leaving group L to obtain a compound of formula (XIV):



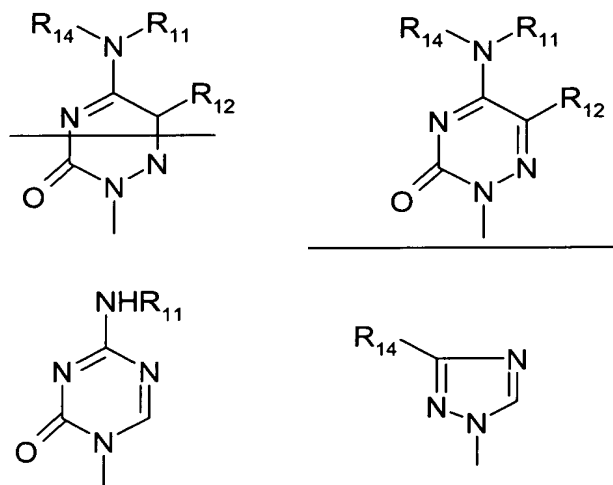
reacting the compound of formula (XIV) with a silylated  $R_2$  compound, in the presence of a Lewis acid, said leaving group is displaced, to produce a compound of formula (IX):



wherein

Z is S, and

R<sub>2</sub> is selected from the following group group:



wherein

R<sub>11</sub> is selected from hydrogen, acetyl, and C<sub>1-6</sub> alkyl groups;

R<sub>12</sub> is selected from hydrogen, hydroxymethyl, trifluoromethyl, substituted or unsubstituted C<sub>1-6</sub> alkyl or alkenyl, bromine, chlorine, fluorine, and iodine; and

R<sub>14</sub> is selected from hydrogen, cyano, carboxy, ethoxycarbonyl, carbamoyl, and thiocarbamoyl.

**65.** (Previously Presented) A process according to claim 63, wherein L is OR<sub>z</sub>, wherein R<sub>z</sub> is selected from: C<sub>1-6</sub> alkyl groups, C<sub>1-6</sub> aliphatic, aromatic acyl groups, saturated or unsaturated alkoxy carbonyl groups, sulphonyl imidazolidine, carbonyl imidazolidine, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

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66. (Previously Presented) A process according to claim 64, wherein L is OR<sub>z</sub>, wherein R<sub>z</sub> is selected from: C<sub>1-6</sub> alkyl groups, C<sub>1-6</sub> aliphatic, aromatic acyl groups, saturated or unsaturated alkoxy carbonyl groups, sulphonyl imidazolide, carbonyl imidazolide, aliphatic or aromatic amino carbonyl groups, alkyl imidate groups, saturated or unsaturated phosphinoyl, and aliphatic or aromatic sulphonyl groups.

67. (Previously Presented) A process according to claim 63, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert solvent.

68. (Previously Presented) A process according to claim 67; wherein said inert solvent is selected from pyridine, toluene and DMSO.

69. (Previously Presented) A process according to claim 63, further comprising oxidizing the sulfur of the compound of formula (IX) to give a compound of formula (IX) wherein Z is S=O or SO<sub>2</sub>.

70. (Previously Presented) A process according to claim 64, wherein the mercaptoacetaldehyde is a monomer obtained from 1,4-dithiane-2,5-diol dissolved in an inert solvent.

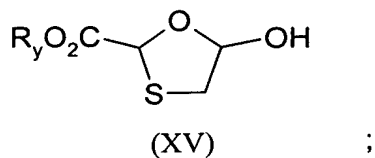
71. (Previously Presented) A process according to claim 70, wherein said inert solvent is selected from pyridine, toluene and DMSO.

72. (Previously Presented) A process according to claim 64, further comprising oxidizing the sulfur of the compound of formula (IX) to give a compound of formula (IX) wherein Z is S=O or SO<sub>2</sub>.

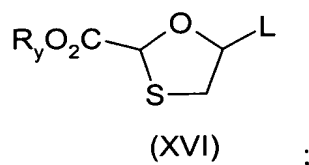
73. (Cancelled):

74. (Currently Amended) A process comprising:

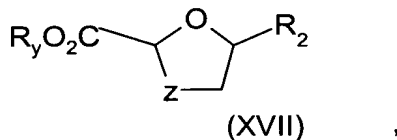
reacting a mercaptoacetaldehyde with a compound of formula  $R_yOOCCHO$ , wherein  $R_y$  is  $C_{1-12}$  alkyl or  $C_{6-20}$  aryl to obtain a compound of formula (XV)



converting the hydroxyl group of the compound of formula (XV) to a leaving group L to obtain a compound of formula (XVI):



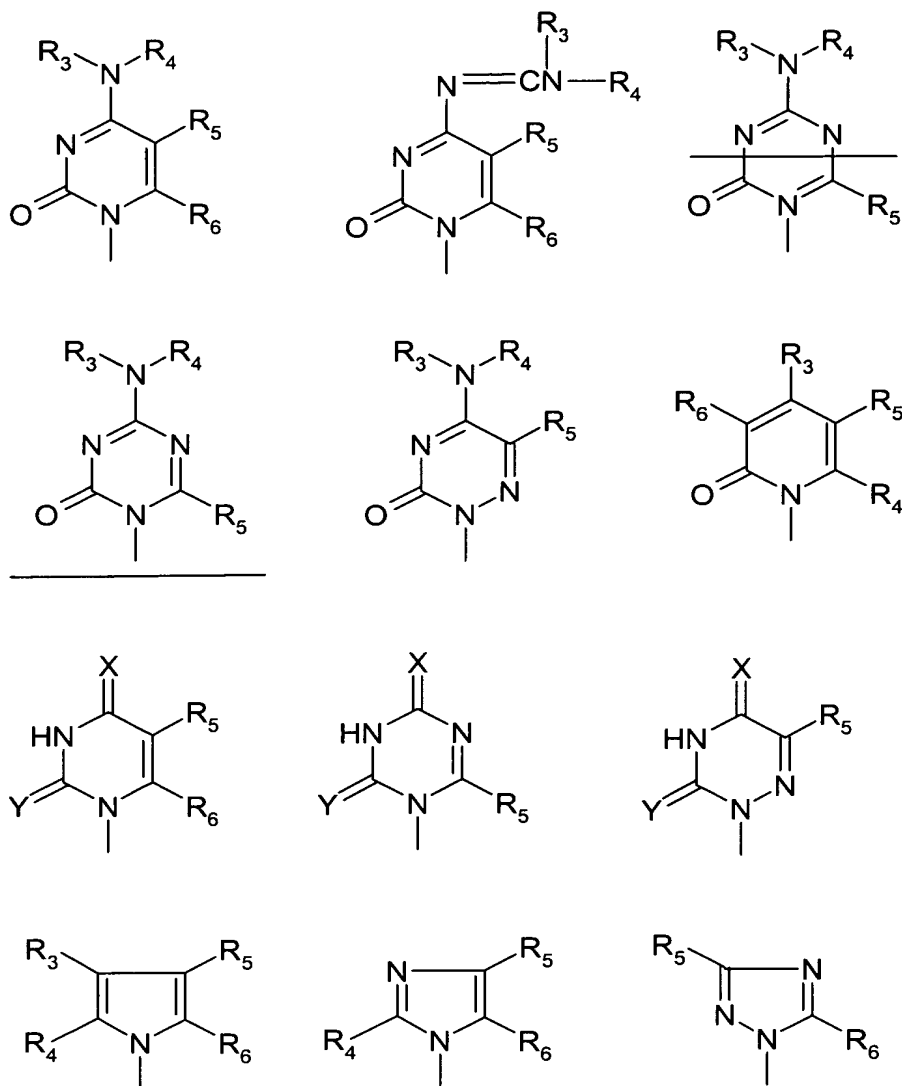
reacting the compound of formula (XVI) with a silylated  $R_2$ - compound, in the presence of a Lewis acid, whereby said leaving group is displaced, to produce a compound of formula (XVII):



wherein

Z is S;

R<sub>2</sub> is selected from the following group:



X is oxygen or sulfur;

Y is oxygen or sulfur;

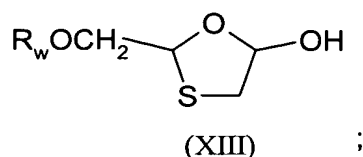
R<sub>3</sub> and R<sub>4</sub> are independently selected from hydrogen, hydroxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyl or aracyl; and

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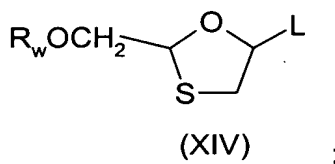
$R_5$  and  $R_6$  are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, and  $C_{1-10}$  acyloxy.

**75.** (Currently Amended) A process comprising:

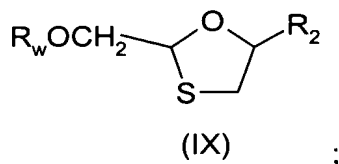
reacting a mercaptoacetaldehyde with a compound of formula  $R_wOCH_2CHO$ , under neutral or basic conditions, wherein  $R_w$  is hydrogen or a hydroxyl protecting group to obtain a compound of formula (XIII)



converting the hydroxyl of the compound of formula (XIII) to a leaving group L to obtain a compound of formula (XIV):

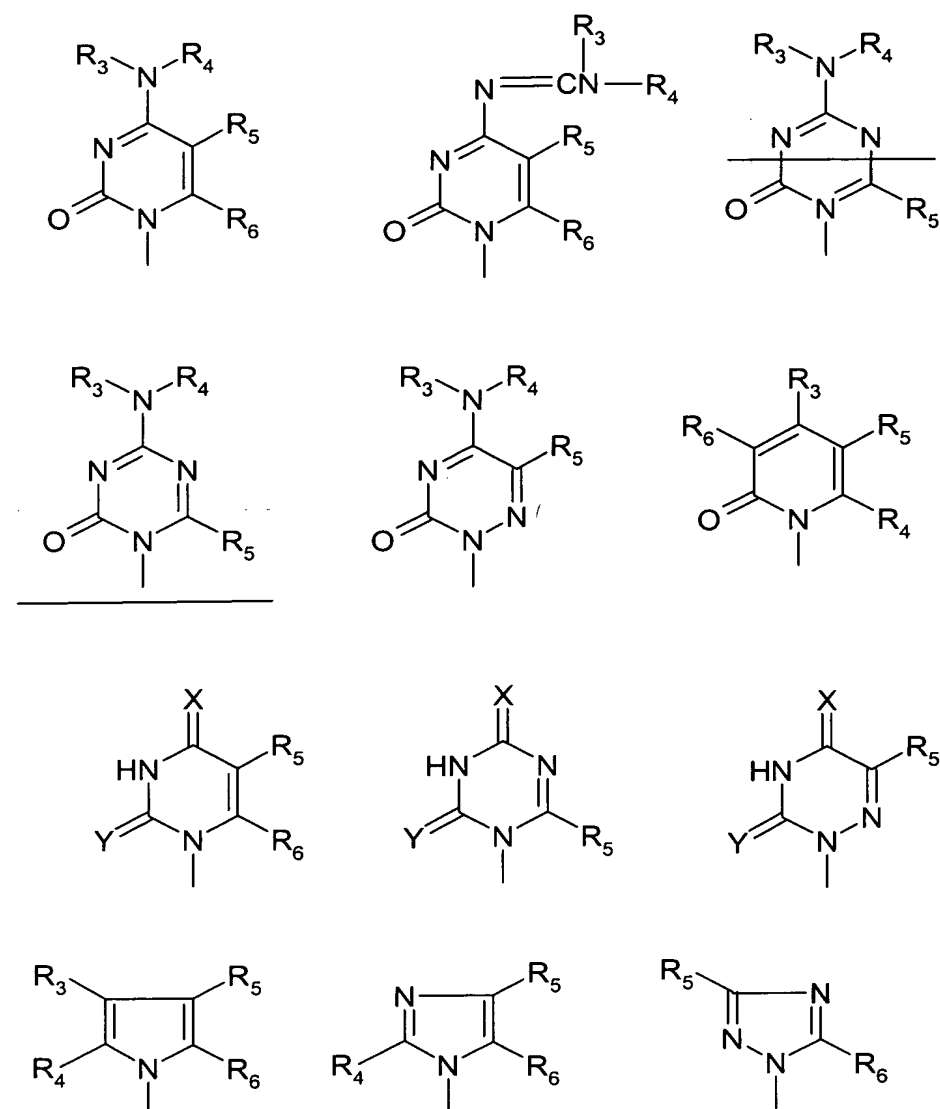


reacting the compound of formula (XIV) with a silylated  $R_2$  compound, in the presence of a Lewis acid, said leaving group is displaced, to produce a compound of formula (IX):  
wherein



Z is S, and

R<sub>2</sub> is selected from the following group:



X is oxygen or sulfur;

Y is oxygen or sulfur;

R<sub>3</sub> and R<sub>4</sub> are independently selected from hydrogen, hydroxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyl or aracyl; and

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$R_5$  and  $R_6$  are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, and  $C_{1-10}$  acyloxy.